Docket No.: OKA-0020
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Tadayoshi Iijima

Application No.: 09/747,955 | Confirmation No.: 3185

Filed: December 27, 2000 | Art Unit: 1794

For: FUNCTIONAL FILM AND METHOD FOR PRODUCING THE SAME | Examiner: Monique R. Jackson

APPEAL BRIEF

MS Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

As required under 37 C.F.R. §41.66(a), this brief is filed within the statutory term of the Notice of Appeal filed in this case on May 27, 2008, and is in furtherance of said Notice of Appeal.

The fees required under 37 C.F.R. §41.20(b)(2), and any required petition for extension of time for filing this brief and fees therefor, are dealt with in the accompanying TRANSMITTAL OF APPEAL BRIEF.

This brief contains items under the following headings as required by 37 C.F.R. §41.67 and §1205.02 of the MPEP:

I. REAL PARTY IN INTEREST

The real party in interest for this appeal is TDK Corporation of Tokyo, Japan. An assignment of all rights in the present application to TDK Corporation has been submitted and recorded by the U.S. Patent and Trademark Office at Reel 011396, Frame 0854.

II. RELATED APPEALS AND INTERFERENCES

There is a pending appeal which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal. The pending appeal is Patent Application No. 09/748,188, the appeal of which is currently pending and has not yet been decided by the Board of Patent Appeals and Interferences.

III. STATUS OF CLAIMS

A. Total Number of Claims in Application

There are 34 total claims in this application.

B. Current Status of Claims

1. Claims canceled: Claims 4-16, 19, 20, 23, 27, 31 and 32

2. Claims withdrawn from consideration but not canceled: None

3. Claims pending: Claims 1-3, 17, 18, 21, 22, 24-26, 28-30, 33 and 34

4. Claims allowed: None

5. Claims rejected: Claims 1-3, 17, 18, 21, 22, 24-26, 28-30, 33 and 34

C. Claims on Appeal

The claims on appeal are claims 1-3, 17, 18, 21, 22, 24-26, 28-30, 33 and 34

IV. STATUS OF AMENDMENTS AFTER FINAL

Applicant filed an Amendment in response to the first Office Action (mailed March 11, 2002) on June 11, 2002, following the filing of the application on December 27, 2000. The Examiner responded to the Amendment with a Final Office Action mailed August 8, 2002. Applicant filed a Response to the Final Office Action on November 8, 2002, and the Examiner responded in an Advisory Action mailed December 26, 2002. Applicant then filed a Request for Continued Examination with a Two Month Extension of Time on January 7, 2003. The Examiner then responded with a non-final Office Action dated March 18, 2003. Applicant then filed an Amendment with a Three Month Extension of Time in response to the non-final Office Action on September 16, 2003. The Examiner responded to the Amendment with a Final Office Action mailed November 26, 2003. Applicant filed a Response to the Final Office Action on February 26, 2004, and the Examiner responded in an Advisory Action mailed March 22, 2004. Applicant then filed a Request for Continued Examination with a One Month Extension of Time on March 26, 2004. The Examiner then responded to the Request for Continued Examination with a Notice of Allowance mailed June 8, 2004 to which the Issue Fee was paid on July 1, 2004. Applicant then filed a Request for Continued Examination and a Petition to Withdraw Application from Issue on February 1, 2005 in view of the Information Disclosure Statements filed September 1, 2004 and December 15, 2004. The Petition was granted on February 3, 2005 and the Examiner issued a non-final Office Action dated June 1, 2006. Applicant then filed an Amendment with a One Month Extension of Time in response to the non-final Office Action on October 2, 2006. The Examiner responded to the Amendment with a Final Office Action mailed December 13, 2006. Applicant then filed a Response to the Final Office Action on April 12, 2007, and the Examiner responded with a Non-Final Office Action mailed May 2, 2007. Applicant then filed an Amendment with a One Month Extension of Time in response to the non-final Office Action on September 4, 2007. The Examiner responded to the Amendment with a Final Office Action mailed November 28, 2007 which is the subject of this Appeal since the claims of the present application have been twice rejected by the Examiner.

Accordingly, the claims enclosed herein in Appendix A are directed to claims 1-3, 17, 18, 21, 22, 24-26, 28-30, 33 and 34 which were presented in Applicant's amendment filed September 4, 2007.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The present invention relates to a functional film as defined in **claim 1** comprising a support and a compressed layer of functional fine particles in contact with the support *(see page 10, lines 22-24, of the specification)*. The compressed layer is obtained by compressing a layer containing the functional fine particles that is formed by application onto the support with a compression force of at least 44 N/mm^2 together with the support *(see page 11, lines 11-13, of the specification)*, at a temperature of not less than an ordinary temperature and below a glass transition temperature of said support *(see page 29, lines 21-24, and page 30, lines 11-13, of the specification)*. The functional film is selected from the group consisting of a magnetic film, a ferromagnetic film, a dielectric film, a ferroelectric film, an electrochromic film, an electroluminescent film, an insulating film, a light-absorbing film, a light selecting absorbing film, a reflecting film, a reflection preventing film, a catalyst film and a photocatalyst film *(see page 11, lines 14-20, of the specification)*, and the support is selected from the group consisting of polyethylene terephthalate film, polyethylene film, polypropylene film, polycarbonate film, acrylic film, and norbornene film *(see page 24, line 23, to page 25, line 2, of the specification)*. The functional fine particles have a particle diameter of 1.0 μm or less *(see page 34, lines 15-16, of the specification)*.

The present invention also relates to a conductive film as defined in **claim 17** comprising a support and a compressed layer of conductive fine particles formed by application to be in contact with the support *(see page 12, lines 3-7, of the specification)*. The compressed layer of conductive fine particles is obtained by compressing a layer containing the conductive fine particles and optionally a binder resin in an amount of less than 3.7 parts by volume with respect to 100 parts by volume of said conductive fine particles *(see page 22, lines 20-24, of the specification)* onto the support with a compression force of at least 44 N/mm^2 together with the support *(see page 12, lines 23-25, of the specification)*, at a temperature of not less than an ordinary temperature and below a glass transition temperature of said support *(see page 29, lines 21-24, and page 30, lines 11-13, of the specification)*. The support is selected from the group consisting of polyethylene terephthalate film, polyethylene film, polypropylene film, polycarbonate film, acrylic film, and norbornene film *(see page 24, line 23, to page 25, line 2, of the specification)*, and the conductive fine particles have a particle diameter from not less than 5 nm to not more than 100 nm *(see page 34, lines 15-16, of the specification)*.

Further, the present invention relates to a transparent conductive film as defined in **claim 24** comprising a support and a compressed layer of conductive fine particles formed by application to be in contact with the support *(see page 12, lines 3-7, of the specification)*. The compressed layer of conductive fine particles is obtained by compressing a layer containing the conductive fine particles and no binder resin onto the support together with the support *(see page 22, lines 20-24, of the specification)*, at a temperature of not less than an ordinary temperature and below a glass transition temperature of said support *(see page 29, lines 21-24, and page 30, lines 11-13, of the specification)*, and then being impregnated with a transparent substance after compression *(see page 14, lines 8-9, of the specification)*. The support is selected from the group consisting of polyethylene terephthalate film, polyethylene film, polypropylene film, polycarbonate film, acrylic film, and norbornene film *(see page 24, line 23, to page 25, line 2, of the specification)*, and the conductive fine particles have a particle diameter from not less than 5 nm to not more than 100 nm *(see page 34, lines 15-16, of the specification)*.

Lastly, the present invention relates to a conductive film as defined in **claim 29** comprising a support and a compressed layer of conductive fine particles in contact with the support *(see page 12, lines 3-7, of the specification)*. The compressed layer is obtained by compressing a layer containing the conductive fine particles that is formed by application onto the support with a compression force of at least $44N/mm^2$ together with the support *(see page 12, lines 23-25, of the specification)*, at a temperature of not less than an ordinary temperature and below a glass transition temperature of said support *(see page 29, lines 21-24, and page 30, lines 11-13, of the specification)*. The support is selected from the group consisting of polyethylene terephthalate film, polyethylene film, polypropylene film, polycarbonate film, acrylic film, and norbornene film *(see page 24, line 23, to page 25, line 2, of the specification)*, and the conductive fine particles have a particle diameter from not less than 5 nm to not more than 100 nm *(see page 34, lines 15-16, of the specification)*.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

1. Whether claims 1-3, 17, 18, 21, 22, 24-26, 28-30, 33 and 34 can be rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement.

2. Whether claims 1-3, 17, 18, 21, 22, 24-26, 28-30, 33 and 34 can be rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

VII. ARGUMENT

In the Office Action of November 28, 2007, the following rejections were presented by the Examiner:

(i) 35 U.S.C. §112, first paragraph

1. The Examiner has rejected claims 1-3, 17, 18, 21, 22, 24-26, 28-30, 33 and 34 under 35 U.S.C. §112, first paragraph, as allegedly failing to comply with the written description requirement.

The Examiner has indicated that the recitation of "*a temperature of not less than an ordinary temperature*" is not supported in the specification and thus, fails to comply with the written description requirement. Applicant respectfully disagrees with the Examiner in this regard and submits that the original specification at the time of filing do provide support for the recitation of "*a temperature of not less than an ordinary temperature*."

Applicant wishes to direct the Examiner's and Board's attention to page 29, lines 21-24, of the original specification in which "*a temperature range below the glass transition temperature (secondary transition temperature)*" is disclosed. The description of "*a temperature range below the glass transition temperature (secondary transition temperature)*" indicates an upper temperature limit for the compression. Hence, "*an ordinary temperature*" on page 30, line 12 of the specification should be understood as the lower temperature limit for the compression. That is, the original specification discloses that the compression is carried out at "*a temperature of not less than an ordinary temperature*". As a result, Applicant believes that such teachings in the specification clearly supported the recitation of "*a temperature of not less than an ordinary temperature*."

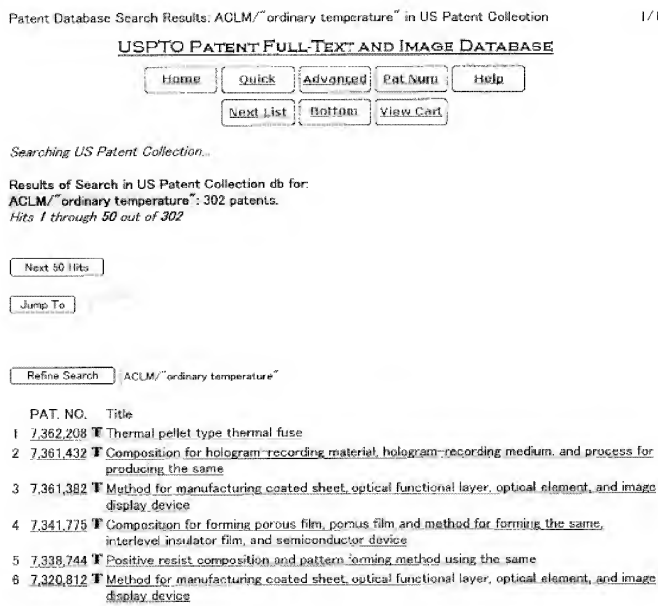
Thus, withdrawal of this rejection is respectfully requested.

(ii) 35 U.S.C. §112, second paragraph

1. The Examiner rejected claims 1-3, 17, 18, 21, 22, 24-26, 28-30, 33 and 34 under 35 U.S.C. §112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The Examiner has argued that the recitation "*an ordinary temperature*" in claims 1, 17, 24 and 29 is a relative term which renders the claim indefinite. Applicant respectfully disagrees with the Examiner in this regard and submits that the recitation of "*an ordinary temperature*" is definite based on U.S. practice

To demonstrate that the rejected recitation is often allowed in U.S. patent claims, Applicant searched the U.S. Patents Database (USPTO PATENT FULL-TEXT AND IMAGE DATEBASE) for the use of the recitation "*ordinary temperature*" and received a result of 302 U.S. Patents with the rejected recitation in the claims. This result of 302 U.S. Patents is provided herein below for the Examiner's information.



Patent Database Search Results: ACLM/"ordinary temperature" in US Patent Collection 1/1

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Searching US Patent Collection...

Results of Search in US Patent Collection db for:
ACLM/"ordinary temperature": 302 patents.
Hits 1 through 50 out of 302

Next 50 Hits

Jump To

Refine Search | ACLM/"ordinary temperature"

	PAT. NO.	Title
1	7,362,208	Thermal pellet type thermal fuse
2	7,361,432	Composition for hologram recording material, hologram recording medium, and process for producing the same
3	7,361,382	Method for manufacturing coated sheet, optical functional layer, optical element, and image display device
4	7,341,775	Composition for forming porous film, porous film and method for forming the same, interlevel insulator film, and semiconductor device
5	7,338,744	Positive resist composition and pattern forming method using the same
6	7,320,812	Method for manufacturing coated sheet, optical functional layer, optical element, and image display device

7 7,311,392 T Inkjet recording ink and method of inkjet recording
8 7,306,080 T Impact absorbing member for vehicle
9 7,300,487 T Sealing material, method for sealing honeycomb structure and sealed honeycomb structure
10 7,291,388 T Adhesive optical component comprising an adhesive composition
11 7,287,970 T Roots compressor
12 7,285,602 T Granular epoxy resin, production method thereof, and granular epoxy resin package
13 7,285,161 T Water base pigment ink for ink-jet recording
14 7,282,243 T Pattern forming method and method of manufacturing ink jet recording head
15 7,262,514 T Epoxy resin composition for semiconductor encapsulation, semiconductor device using the same, and process for producing semiconductor device
16 7,253,246 T Thermosetting polycarbodiimide copolymer
17 7,250,212 T Porous body-coated fiber, porous body-coated particle, and formed article using the same
18 7,244,485 T Method for manufacturing coated sheet, optical functional layer, optical element, and image display device
19 7,221,524 T Lens unit and compact image pickup module
20 7,221,078 T Spark plug with improved noble metal chip
21 7,220,787 T Photoreactive hot-melt adhesive composition
22 7,214,318 T Method for separation of actinide elements
23 7,199,590 T Screening method for laminated ceramic capacitors
24 7,189,788 T Polyolefin resin composition
25 7,189,657 T Semiconductor substrate surface protection method
26 7,176,269 T Curable composition and its use
27 7,156,909 T Oily ink composition for ink-jet recording, and ink-jet recording method
28 7,156,010 T Disk cutter
29 7,153,812 T Heat-sensitive recording material
30 7,137,709 T Image projector
31 7,099,251 T Method of controlling laser power and optical disk player
32 7,092,179 T Write precompensation amount setting method and apparatus
33 7,060,123 T Fluorescent ink, and ink cartridge recording unit, ink-jet recording method, and ink-jet recording apparatus employing the fluorescent ink
34 7,041,332 T Modification method of surface layer of molded resin article, and modification apparatus of surface layer of molded resin article
35 7,019,086 T Process for producing modified polymer
36 7,014,366 T Fluid dynamic bearing and magnetic disk apparatus
37 6,996,142 T Light source device and wavelength control device therefor
38 6,993,240 T Optical fiber probe for diagnosing combustion condition in a combustor
39 6,956,432 T Transmission output correcting apparatus
40 6,954,029 T Back panel and/or spacer for display apparatus and display apparatus using the same
41 6,952,516 T Low attenuation optical fiber
42 6,906,119 T Thermoplastic foam and method for production thereof
43 6,903,510 T Arc tube having compressive stress and method for manufacture of an arc tube
44 6,897,042 T Low-temperature inducible expression vector
45 6,889,520 T Inter-region thermal complementary system by distributed cryogenic and thermal devices
46 6,875,261 T Unburned color pencil lead
47 6,864,315 T Crosslinkable rubber compositions and use thereof
48 6,859,319 T Optical element, mold for molding optical element and optical pickup device
49 6,858,673 T Composition for hydrogel, hydrogel and use thereof
50 6,858,369 T Toner and manufacturing method thereof

Applicant submits that this search result clearly demonstrates that the recitation "*an ordinary temperature*" is a commonly used technical term of art in claims of U.S. Patents and that such recitation would be well understood to one skilled in the art. In other words, Applicant believes that one skilled in the art would clearly be able to ascertain the requisite degree of what constitute "*an ordinary temperature*" based on the knowledge in the art and the teachings of the specification *(see page 29, lines 21-24, and page 30, lines 11-13, of the specification and in particular, the definition of "an environment suitable for human work")* and thereby be reasonably apprised of the scope of the present invention.

Applicant has provided herein below the claims of four U.S. Patents from the above result of 302 U.S. Patents which includes the recitation "*an ordinary temperature*" for the Examiner's and Board's review and consideration. In particular, Applicant wishes to note that U.S. Patent No. 5,990,222 relates to a RESIN-FILLER COMPOSITE AND PRODUCTION METHOD THEREOF. Claim 1 of this reference recites "*a step of compression molding this mixed powder in predetermined shape at ordinary temperature*". Therefore, the recitation "*an ordinary temperature*" has been demonstrated by this patent to be absolutely definite to one of ordinary skilled in the art.

US005990222A

United States Patent [19]

Watada et al.

[11] **Patent Number: 5,990,222**

[45] **Date of Patent: Nov. 23, 1999**

[54] **RESIN-FILLER COMPOSITE AND PRODUCTION METHOD THEREOF**

[75] Inventors: **Kazuo Watada**, Yoichi Fujioka, both of Sendai; **Hiroko Tanda**, Koji Enokida, both of Kokuba; **Saeki Nakamura**, Sendai, all of Japan

[73] Assignee: **Kyocera Corporation**, Kyoto-Fu, Japan

[21] Appl. No.: **08/999,369**

[22] Filed: **Dec. 29, 1997**

[30] **Foreign Application Priority Data**

Dec. 25, 1996 [JP] Japan 8-358120*

[51] Int. Cl.* C08K 3/00

[52] U.S. Cl. 524/492, 524/430; 524/437; 524/493

[58] Field of Search 524/492, 493, 524/430, 437

[56] **References Cited**

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4,766,162 8/1988 Hammanoto et al. 525/440

Primary Examiner—Edward J. Cain
Attorney, Agent, or Firm—Loeb & Loeb, LLP

[57] **ABSTRACT**

The present invention relates to a composite of resin and fillers used in electronic parts and structural parts, and to a process for producing the same, and the object of the present invention is to provide a resin composite with a molded body having high dimensional accuracy, being free of surface defects attributable to a mold used for molding and being capable of easy forming and mass production, as well as a process for producing the same. The process for producing a resin composite according to the present invention comprises a step of mixing fillers of an average particle diameter of 40 μm or less with thermosetting resin, a step of compression molding this mixed powder into a predetermined shape at ordinary temperature, and a step of allowing the compression molded body after released from the mold to be hardened by heating at 100 to 250° C. to give a hardened molded body.

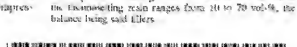
5 Claims, 3 Drawing Sheets

We claim:

1. A process for producing a resin composite comprising a step of mixing fillers of an average particle diameter of 40 μm or less with thermosetting resin, a step of compression molding this mixed powder in a predetermined shape at ordinary temperature, and a step of hardening the compression molded body after released from the mold by heating at 100 to 250° C. to obtain a hardened molded body.

2. A process for producing a resin composite according to claim 1 wherein the thermosetting resin is condensation type resin such as epoxy resin, phenol resin, and the like.

3. A process according to claim 1 wherein the amount of the thermosetting resin ranges from 10 to 70 vol-%, the balance being said fillers.



(12) **United States Patent**
Machida et al.

(10) **Patent No.: US 7,189,788 B2**
(45) **Date of Patent: Mar. 13, 2007**

(54) **POLYOLEFIN RESIN COMPOSITION**

(75) Inventors: **Shuji Machida**, Chiba (JP); **Yutaka Kobayashi**, Chiba (JP); **Hideo Kusuyama**, Chiba (JP); **Akira Tanaka**, Chiba (JP)

(73) Assignee: **Idemitsu Kosan Co. Ltd.**, Tokyo (JP)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 228 days.

(21) Appl. No.: **10/482,418**

(22) PCT Filed: **Jul. 2, 2002**

(86) PCT No.: **PCT/JP02/06693**

§ 371 (c)(1),
(2), (4) Date: **Jan. 12, 2004**

(87) PCT Pub. No.: **WO03/008497**

PCT Pub. Date: **Jan. 30, 2003**

(65) **Prior Publication Data**

US 2004/0176520 A1 Sep. 9, 2004

(30) **Foreign Application Priority Data**

Jul. 12, 2001 (JP) 2001-212381
Jul. 12, 2001 (JP) 2001-212476
Jul. 12, 2001 (JP) 2001-212477
Jul. 13, 2001 (JP) 2001-213449

(51) **Int. Cl.**
C08L 23/10 (2006.01)

(52) U.S. Cl. **525/240**; 525/322; 525/323; 525/386; 526/351

(58) **Field of Classification Search** 525/240, 525/322, 323, 88; 526/351
See application file for complete search history.

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Primary Examiner—James J. Seidleck
Assistant Examiner—Olga Asanovsky
(74) *Attorney, Agent, or Firm*—Oblon, Spivak, McClelland, Maier & Neustadt, P.C.

(57) **ABSTRACT**

The polyolefin-based resin composition (I) of the present invention comprises (A) 69.9 to 80% by mass of a propylene copolymer having (a) a melt flow rate (MFR) of 0.1 to 200 g/10 min, (b) a meso-pentad fraction [mmmm] of no ordinary temperature (25° C.) xylene-insoluble component of 97.0% or higher, and (c) a content of an ordinary temperature (25° C.) xylene-soluble component of 4 to 50% by mass, and (B) 0.1 to 20% by mass of a copolymer containing propylene chains of an isotactic structure and copolymer chains constituted from at least two monomer units selected from the group consisting of ethylene, C_4 to C_{20} α-olefins, cyclic olefins and aromatic vinyl monomers which are graft-bonded and/or block-bonded to said copolymer, and exhibits not only a high rigidity but also a highly enhanced impact strength and is well-balanced between the physical properties thereof.

8 Claims, No Drawings

The invention claimed is:

1. A polyolefin-based resin composition comprising:

(A) 69.7 to 82% by mass of a propylene copolymer having (a) a melt flow rate (MFR) of 0.1 to 200 g/10 min, (b) a meso-pentad fraction [mmmm] of an ordinary temperature (25° C.) xylene-insoluble component of 97.0% or higher, and (c) a content of an ordinary temperature (25° C.) xylene-soluble component of 4 to 50% by mass; and

(B) 0.3 to 18% by mass of a copolymer containing propylene chains of an isotactic structure, and copolymer chains constituted from at least two monomer units selected from the group consisting of ethylene, C_4 to C_{20} α-olefins, cyclic olefins and aromatic vinyl monomers which are graft-bonded and/or block-bonded to said copolymer,

wherein the propylene chains of an isotactic structure contained in said component (B) have a meso-pentad fraction [mmmm] of 40 to 99.9%, and said component (B) has an intrinsic viscosity [η] of 0.05 to 10 dl/g as measured at 135° C. in decalin, and contains polypropylene moieties in an amount of 42 to 98% by mass based on the amount of the copolymer (B).

2. The polyolefin-based resin composition according to claim 1, wherein said component (B) is at least one copolymer selected from the group consisting of [(B)-1] a copolymer having a graft bonding site formed by an olefin-based macromonomer and/or a polymer, [(B)-2] a copolymer having a block bonding site produced by the coupling reaction, and [(B)-3] a copolymer having both the graft bonding site defined by [(B)-1] and the block bonding site defined by [(B)-2].

(12) **United States Patent**
Tanigawa et al.

(10) **Patent No.: US 7,361,432 B2**
(45) **Date of Patent: Apr. 22, 2008**

(54) **COMPOSITION FOR HOLOGRAM-RECORDING MATERIAL, HOLOGRAM-RECORDING MEDIUM, AND PROCESS FOR PRODUCING THE SAME**

(75) Inventors: **Hideo Tanigawa**, 8-28, Deshinda-3-chome, Ikeda-shi, Osaka (JP); **Yasuo Matoba**, Osaka (JP); **Tetsuyuki Saiku**, Osaka (JP); **Takashi Matsuo**, Osaka (JP); **Kazunori Yokoyama**, Osaka (JP)

(73) Assignees: **National Institute of Advanced Industrial Science and Technology**, Tokyo (JP); **Hideo Tanigawa**, Osaka (JP); **Daiso Co., Ltd.**, Osaka (JP)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 426 days.

(21) Appl. No.: 10/470,771

(22) PCT Filed: **Jan. 30, 2002**

(86) PCT No.: **PCT/JP02/00681**

§ 371 (c)(1),
(2), (4) Date: **Dec. 10, 2003**

(87) PCT Pub. No.: **WO02/061568**

PCT Pub. Date: **Aug. 8, 2002**

(65) **Prior Publication Data**

US 2004/0096776 A1 May 20, 2004

(30) **Foreign Application Priority Data**

Feb. 1, 2001 (JP) 2001-025122
Jul. 19, 2001 (JP) 2001-219584

(51) **Int. Cl.**
G03H 1/02 (2006.01)

(52) **U.S. Cl.** 430/1; 430/2; 359/3

(58) **Field of Classification Search** ..... None
See application file for complete search history.

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Chemical structures (generated Dec. 2007) (8 pages).*

(Continued)

Primary Examiner—Martin Angebranndt
(74) *Attorney, Agent, or Firm*—Cheng Law Group PLLC

(57) **ABSTRACT**

An object of the present invention is to provide a hologram recording material composition comprising a radical polymerizable compound being solid at an ordinary temperature and having a 9,9-diarylfluorene skeleton, a polymeric binder and a plasticizer, the composition being excellent in transparency and diffraction efficiency, which are characteristics required for a hologram.

The hologram recording material composition comprises a thermoplastic resin (A) which is soluble in a solvent, a radical polymerizable compound (B) which is solid at an ordinary temperature and at ordinary pressure and has the 9,9-diarylfluorene skeleton and at least one radical polymerizable unsaturated double bond, a plasticizer (C) and a photopolymerization initiator (D). A weight percentage ratio of the thermoplastic resin (A), the radical polymerizable compound (B) and the plasticizer (C), (A):(B):(C) is 10 to 80:10 to 80:10 to 80. A refractive index of the radical polymerizable compound (B) is larger than a weighted mean of that of the thermoplastic resin (A) and that of the plasticizer (C).

6 Claims, 1 Drawing Sheet

The invention claimed is:

1. A volume phase-type hologram recording material composition to be used for recording intensity distribution of light and shade of an interference fringe obtained by making light interfere as a change in refractive index, characterized in that the composition comprises

a thermoplastic resin (A) which is soluble in an organic solvent,

a radical polymerizable compound (B) which is solid at an ordinary temperature and at ordinary pressure and has a 9,9-diarylfluorene skeleton and at least one radical polymerizable unsaturated double bond,

a plasticizer (C) and

a photopolymerization initiator (D),

wherein a weight percentage ratio of the thermoplastic resin (A), the radical polymerizable compound (B) and the plasticizer (C), (A):(B):(C) is 10 to 80:10 to 80:10 to 80, and a weight percentage ratio of the radical polymerizable compound (B) and the plasticizer (C), (B):(C) is 1:1.5 to 1:6.5,

wherein the thermoplastic resin (A) is selected from the group consisting of polyvinyl acetate, polyvinyl butyrate, polymethyl methacrylate, cellulose acetate butyrate, a copolymer of cyclic aliphatic (meth)acrylate and methyl (meth)acrylate and combinations thereof,

US007361382B2

(12) **United States Patent**
Tsuchimoto et al.

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(54) **METHOD FOR MANUFACTURING COATED SHEET, OPTICAL FUNCTIONAL LAYER, OPTICAL ELEMENT, AND IMAGE DISPLAY DEVICE**

(75) Inventors: **Kazuki Tsuchimoto**, Daitoku (JP); **Seiji Kondou**, Ibaraki (JP); **Tomoaki Masuda**, Ibaraki (JP)

(73) Assignee: **Nitto Denko Corporation**, Osaka (JP)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 640 days.

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(51) **Int. Cl.**
B05D 5/06 (2006.01)

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(58) **Field of Classification Search** 427/162, 427/166, 167; 349/123, 124
See application file for complete search history.

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Primary Examiner—Alain L. Bashore
(74) *Attorney, Agent, or Firm*—Westerman, Hattori, Daniels & Adrian, LLP

(57) **ABSTRACT**

A method for manufacturing a coated sheet that forms a coated layer having a uniform film thickness by a coating liquid even when a substrate has a large area. A method for manufacturing a coated sheet to form a coated layer by a process including a process (1) for coating a coating liquid including a resin material and a solvent on a substrate, and a drying process (2) for drying a coated liquid, wherein a drying speed of a coated liquid in the drying process (2) is set 0.3 [g/m^2·s] or less.

7 Claims, 1 Drawing Sheet

What is claimed is:

1. A method for manufacturing a coated sheet to form a coated layer by a process including a process (1) for coating a coating liquid including a resin material and a solvent on a substrate, and a drying process (2) for drying a coated liquid, wherein:

the drying process (2) is a process of performing at least an initial drying of drying the coated liquid, the coated liquid being a coated liquid having an initial viscosity of 0.1 to 20 [mPa·s] at 25°C. at ordinary temperature without using any dry wind at a constant-rate drying stage, and a later drying of using dry wind to dry the coated liquid at a decreased rate drying stage after the initial drying,

a drying speed of the coated liquid in the drying process (2) is set 0.3 [g/m^2·s] or less, and

at the decreased rate drying stage, the drying is continued until a viscosity of the coated liquid at a drying temperature reaches at least 50 [mPa·s], while the viscosity of the coated liquid being raised with time and further after the viscosity of the coated liquid at the drying temperature reaches 50 [mPa·s], a residual solvent in the coated liquid is further dried so that the viscosity of the coated liquid at the drying temperature may not become 50 [mPa·s] or less.

Finally, regarding the Examiner's comments on page 2, line 19, to page 3, line 5, of the Office Action, Applicant wishes to explain and emphasize that there is no difference in practical meaning between "*the roll temperature*" and "*the compression temperature*" since the roll temperature is the compression temperature itself, because the compression is carried out by sandwiching a film between rotated rolls.

Thus, for these reasons, withdrawal of this rejection is respectfully requested.

(iii) 35 U.S.C. §102

None

(iv) 35 U.S.C. §103

None

(v) Other

None

VIII. CLAIMS APPENDIX

A copy of the claims involved in the present appeal is attached hereto as Appendix A.

IX. EVIDENCE APPENDIX

No evidence pursuant to §§1.130, 1.131, or 1.132 or entered by or relied upon by the Examiner is being submitted.

X. RELATED PROCEEDINGS APPENDIX

The related proceeding referenced in II. above has not resulted in a decision from the Board of Patent Appeals and Interferences. Thus, no copy of the decision in the related proceeding is being provided.

CONCLUSION

Applicant believes that no additional fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 50-4422, under Order No. OKA-0020 from which the undersigned is authorized to draw.

Dated: August 27, 2008

Respectfully submitted,

By:_____

Lee Cheng
Registration No.: 40,949
CHENG LAW GROUP PLLC
1100 17th Street, N.W.
Suite 503
Washington, DC 20036
(202) 530-1280
Attorneys for Applicant

APPENDIX A

Claims Involved in the Appeal of Application Serial No. 09/747,955.

1. (Previously Presented) A functional film comprising:

a support and a compressed layer of functional fine particles in contact with the support,

said compressed layer obtained by compressing a layer containing the functional fine particles that is formed by application onto the support with a compression force of at least 44 N/mm^2 together with the support, at a temperature of not less than an ordinary temperature and below a glass transition temperature of said support,

said functional film being selected from the group consisting of a magnetic film, a ferromagnetic film, a dielectric film, a ferroelectric film, an electrochromic film, an electroluminescent film, an insulating film, a light-absorbing film, a light selecting absorbing film, a reflecting film, a reflection preventing film, a catalyst film and a photocatalyst film, said support being selected from the group consisting of polyethylene terephthalate film, polyethylene film, polypropylene film, polycarbonate film, acrylic film, and norbornene film,

said functional fine particles having a particle diameter of 1.0 μm or less.

2. (Original) The functional film according to claim 1, wherein said layer containing the functional fine particles is formed by applying a liquid in which the functional fine particles are dispersed onto the support and drying the liquid.

3. (Original) The functional film according to claim 1, wherein said functional fine particles are selected from inorganic fine particles.

17. (Previously Presented) A conductive film comprising:

a support and a compressed layer of conductive fine particles formed by application to be in contact with the support,

wherein said compressed layer of conductive fine particles is obtained by compressing a layer containing the conductive fine particles and optionally a binder resin in an

amount of less than 3.7 parts by volume with respect to 100 parts by volume of said conductive fine particles onto the support with a compression force of at least 44 N/mm^2 together with the support, at a temperature of not less than an ordinary temperature and below a glass transition temperature of said support,

said support being selected from the group consisting of polyethylene terephthalate film, polyethylene film, polypropylene film, polycarbonate film, acrylic film, and norbornene film,

wherein said conductive fine particles have a particle diameter from not less than 5 nm to not more than 100 nm.

18. (Previously Presented) The conductive film according to claim 17, wherein said layer containing the conductive fine particles is formed by applying a liquid in which the conductive fine particles are dispersed onto the support and drying the liquid.

21. (Previously Presented) The conductive film according to claim 17, wherein said compressed layer of the conductive fine particles is impregnated with a transparent substance, whereby said conductive film has a function as a transparent conductive film.

22. (Previously Presented) The conductive film according to claim 17, wherein said conductive fine particles are inorganic conductive fine particles selected from the group consisting of tin oxide, indium oxide, zinc oxide, cadmium oxide, antimony-doped tin oxide (ATO), fluorine-doped tin oxide (FTO), tin-doped indium oxide (ITO) and aluminum-doped zinc oxide (AZO).

24. (Previously Presented) A transparent conductive film comprising a support and a compressed layer of conductive fine particles formed by application to be in contact with the support,

wherein said compressed layer of conductive fine particles is obtained by compressing a layer containing the conductive fine particles and no binder resin onto the support together with the support, at a temperature of not less than an ordinary temperature and below a glass transition temperature of said support, and then being impregnated with a transparent substance after compression,

said support being selected from the group consisting of polyethylene terephthalate film, polyethylene film, polypropylene film, polycarbonate film, acrylic film, and norbornene film,

said conductive fine particles having a particle diameter from not less than 5 nm to not more than 100 nm.

25. (Previously Presented) The transparent conductive film according to claim 24, wherein said layer containing the conductive fine particles is formed by applying a liquid in which the conductive fine particles are dispersed onto the support and drying the liquid.

26. (Previously Presented) The transparent conductive film according to claim 24, wherein said compressed layer of the conductive fine particles is obtained by compressing with a compression force of at least 44 N/mm^2.

28. (Previously Presented) The transparent conductive film according to claim 24, wherein said conductive fine particles are inorganic conductive fine particles selected from the group consisting of tin oxide, indium oxide, zinc oxide, cadmium oxide, antimony-doped tin oxide (ATO), fluorine-doped tin oxide (FTO), tin-doped indium oxide (ITO) and aluminum-doped zinc oxide (AZO).

29. (Previously Presented) A conductive film comprising:

a support and a compressed layer of conductive fine particles in contact with the support,

said compressed layer obtained by compressing a layer containing the conductive fine particles that is formed by application onto the support with a compression force of at least $44N/mm^2$ together with the support, at a temperature of not less than an ordinary temperature and below a glass transition temperature of said support,

said support being selected from the group consisting of polyethylene terephthalate film, polyethylene film, polypropylene film, polycarbonate film, acrylic film, and norbornene film, wherein said conductive fine particles have a particle diameter from not less than 5 nm to not more than 100 nm.

30. (Previously Presented) The conductive film according to claim 29, wherein said layer containing the conductive fine particles is formed by applying a liquid in which the conductive fine particles are dispersed onto the support and drying the liquid.

33. (Previously Presented) The conductive film according to claim 29, wherein said compressed layer of the conductive fine particles is impregnated with a transparent substance, whereby said conductive film has a function as a transparent conductive film.

34. (Previously Presented) The conductive film according to claim 29, wherein said conductive fine particles are inorganic conductive fine particles selected from the group consisting of tin oxide, indium oxide, zinc oxide, cadmium oxide, antimony-doped tin oxide (ATO), fluorine-doped tin oxide (FTO), tin-doped indium oxide (ITO) and aluminum-doped zinc oxide (AZO).